

What is claimed is:

1. An optical modulator having a function to compensate for the change of the static characteristic
5 of an external modulator, comprising:

a superimposition unit superimposing a signal with a low frequency on an optical signal outputted by the external modulator;

10 an extraction unit extracting a component of an optical signal corresponding to the superimposed signal;

a comparison unit comparing the extracted signal with the signal with the low frequency; and

15 a change unit changing an amplitude of a driving signal to be supplied to the external modulator, based on an output of the comparison unit.

2. The optical modulator according to claim 1,
wherein

20 said comparison unit outputs a result of adding a voltage of the extracted signal to a voltage of the signal with the low frequency.

3. The optical modulator according to claim 1,
25 wherein

5 said comparison unit detects cases where an amplitude of the driving signal is larger and smaller than the static characteristic of the external modulator, using as reference a comparison value in a case that
the static characteristic of the external modulator and an amplitude of the driving signal coincide.

4. The optical modulator according to claim 1,
wherein

10 said comparison unit compares an untoothed waveform obtained by removing alternate pulses from a signal with a frequency twice as much as that of the signal with the low frequency, with a waveform with a frequency component twice as much as that of the signal
15 with the low frequency.

5. The optical modulator according to claim 1,
wherein

20 said superimposition unit superimposes a signal with the low frequency on an optical output of the external modulator by applying a signal voltage with the low frequency to a driving electrode of the external modulator.

25 6. The optical modulator according to claim 1,

wherein

said superimposition unit superimposes a signal with the low frequency on an optical output of the external modulator by directly controlling a light source supplying the external modulator with light.

7. An optical modulator having a function to compensate for the change of the static characteristic of an external modulator, comprising:

10 a superimposition unit superimposing signals each with a first or second low frequency on an optical signal outputted by the external modulator;

an extraction unit extracting a component of an optical signal corresponding to the superimposed 15 signal;

a comparison unit comparing the extracted signal and signals with the first and the second low frequency;

an amplitude changing unit changing an amplitude of a driving signal to be supplied to the external 20 modulator, based on an output of the comparison unit; and

a voltage changing unit changing an operating point voltage to be supplied to the external modulator, based on the output of the comparison unit.

8. A method for compensating for the change of the static characteristic in an external modulator, comprising:

superimposing a signal with a low frequency on an
5 optical signal outputted by the external modulator;

extracting a component of an optical signal
corresponding to the superimposed signal;

comparing the extracted signal with the signal
with the low frequency; and

10 changing an amplitude of a driving signal to be
supplied to the external modulator, based on an output
of the comparison unit.

9. The method according to claim 8, wherein
15 in said comparison step, a result of adding a
voltage of the extracted signal is added to a voltage
of the signal with the low frequency.

10. The method according to claim 8, wherein
20 in said comparison step, cases where an amplitude
of the driving signal is larger and smaller than the
static characteristic of the external modulator, are
detected using as reference a comparison value in a case
that the static characteristic of the external modulator
25 and an amplitude of the driving signal coincide.

11. The method according to claim 8, wherein
in said comparison step, an untoothed waveform
obtained by removing alternate pulses from a signal with
5 a frequency twice as much as that of the signal with
the low frequency is compared with a waveform with a
frequency component twice as much as that of the signal
with a low frequency.

- 10 12. The method according to claim 8, wherein
in said superimposition step, a signal with the
low frequency is superimposed on an optical output of
the external modulator by applying a signal voltage with
the low frequency to a driving electrode of the external
15 modulator.

13. The method according to claim 8, wherein
in said superimposition step, a signal with the
low frequency is superimposed on an optical output of
20 the external modulator by directly controlling a light
source supplying the external modulator with light.

14. A method for compensating for the change of the
static characteristic of an external modulator,
25 comprising:

superimposing signals each with a first or second low frequency on an optical signal outputted by the external modulator;

extracting a component of an optical signal
5 corresponding to the superimposed signal;

comparing the extracted signal and signals with the first and the second frequency;

changing an amplitude of a driving signal to be supplied to the external modulator, based on an output
10 of the comparison step; and

changing an operating point voltage to be supplied to the external modulator, based on the output of the comparison step.